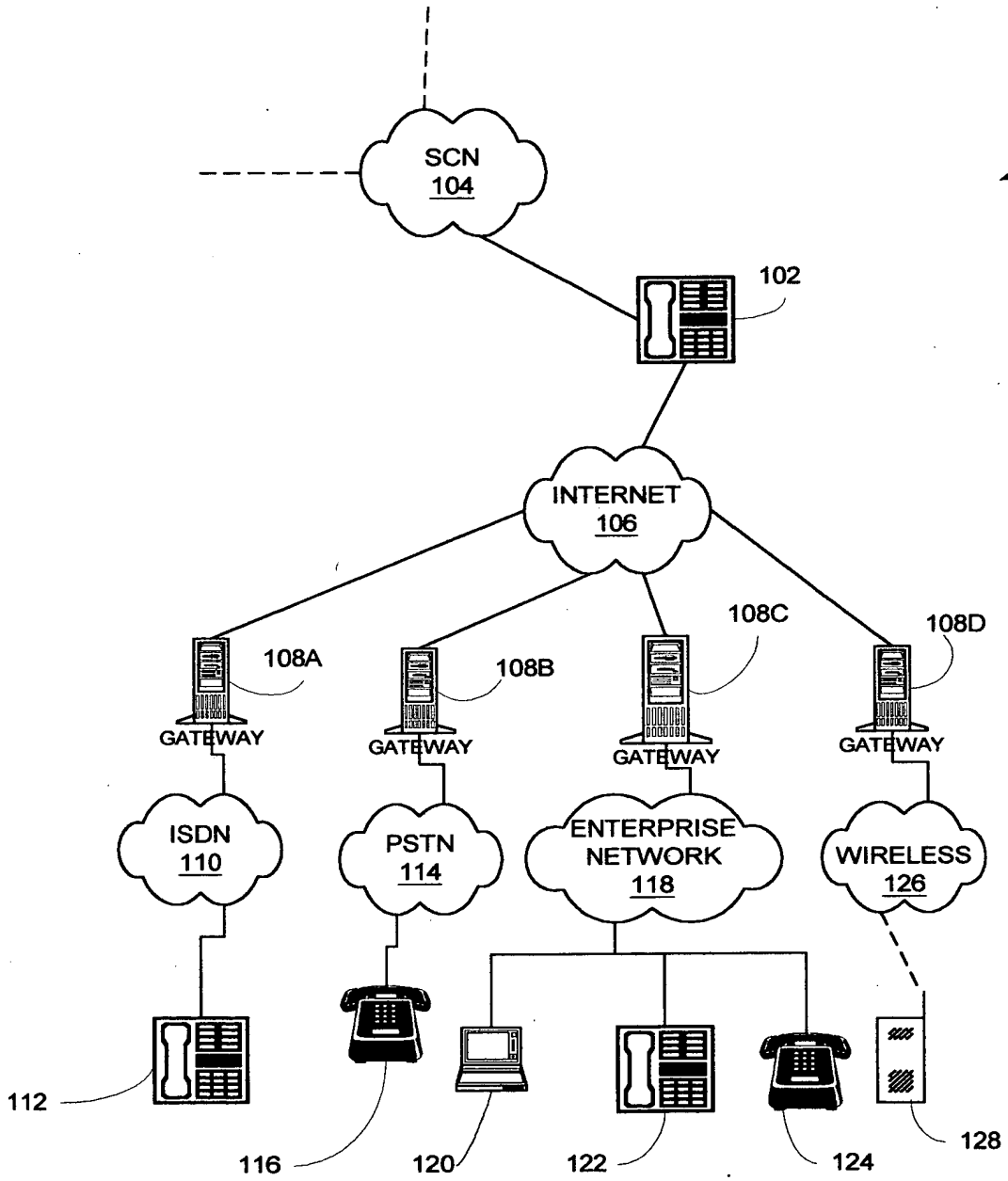

100
SCN
104
102
INTERNET
106
108A
108B
108C
108D
GATEWAY
GATEWAY
GATEWAY
GATEWAY
ISDN
110
PSTN
114
ENTERPRISE
NETWORK
118
WIRELESS
126
112
116
120
122
124
128

FIGURE 1

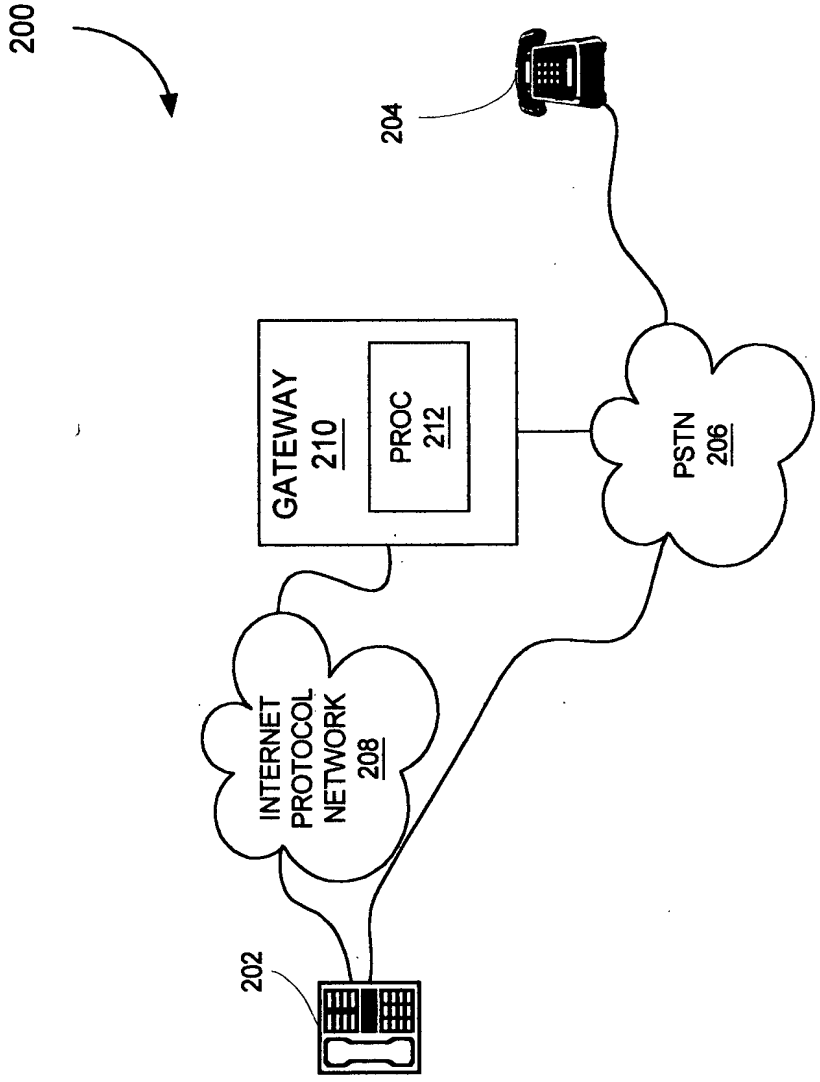
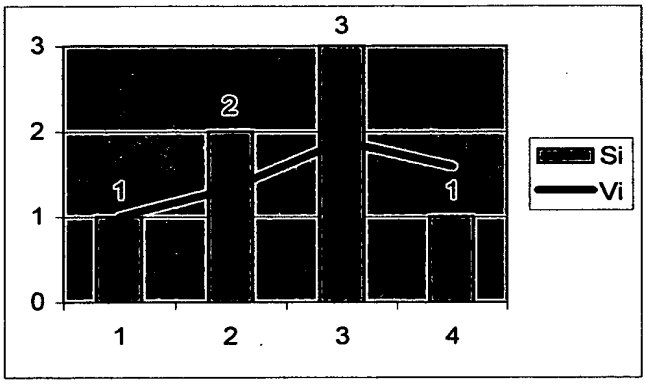

200
204
GATEWAY
210
PROC
212
PSTN
206
INTERNET
PROTOCOL
NETWORK
208
202

FIGURE 2

Interval	S_i	V_{i-1}	Eqn $\frac{1}{3}S_i + \frac{2}{3}V_{i-1}$	Expansion	Value
0	1	n/a	(1)		1
1	2	1	$\frac{1}{3}(2)+\frac{2}{3}(1)$		$\frac{4}{3}=1\frac{1}{3}$
2	3	$\frac{4}{3}$	$\frac{1}{3}(3)+\frac{2}{3}(\frac{4}{3})$	$\frac{1}{3}(3)+\frac{2}{3}[\frac{1}{3}(2)+\frac{2}{3}(1)]$	$\frac{17}{9}=1\frac{8}{9}$
3	1	$\frac{17}{9}$	$\frac{1}{3}(1)+\frac{2}{3}(\frac{17}{9})$	$\frac{1}{3}(1)+\frac{2}{3}\{\frac{1}{3}(3)+\frac{2}{3}[\frac{1}{3}(2)+\frac{2}{3}(1)]\}$	$\frac{43}{27}=1\frac{16}{27}$

302



304

FIGURE 3

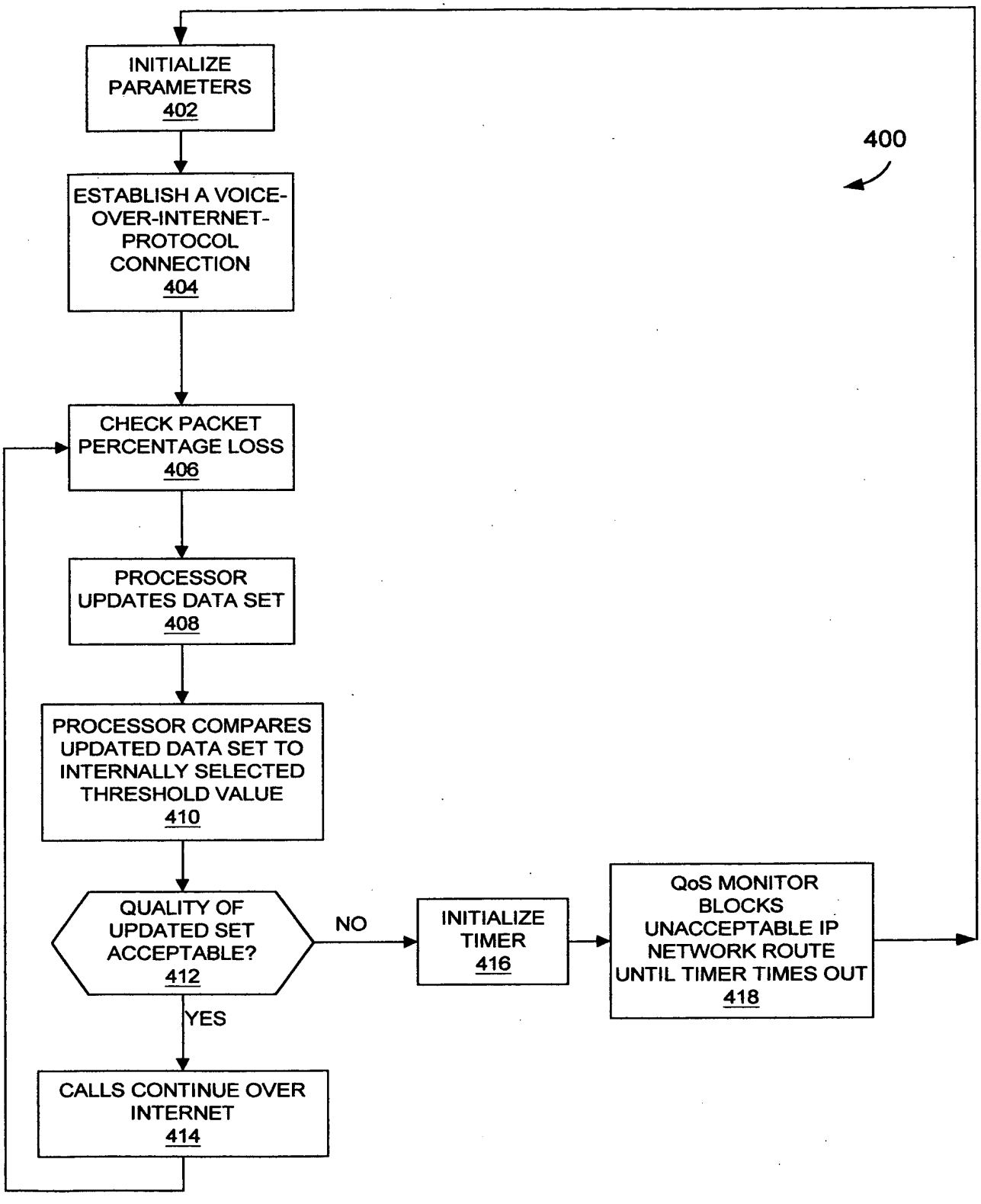

INITIALIZE PARAMETERS 402
400
ESTABLISH A VOICE-OVER-INTERNET-PROTOCOL CONNECTION 404
CHECK PACKET PERCENTAGE LOSS 406
PROCESSOR UPDATES DATA SET 408
PROCESSOR COMPARES UPDATED DATA SET TO INTERNALLY SELECTED THRESHOLD VALUE 410
QUALITY OF UPDATED SET ACCEPTABLE? 412
NO
INITIALIZE TIMER 416
QoS MONITOR BLOCKS UNACCEPTABLE IP NETWORK ROUTE UNTIL TIMER TIMES OUT 418
YES
CALLS CONTINUE OVER INTERNET 414

FIGURE 4

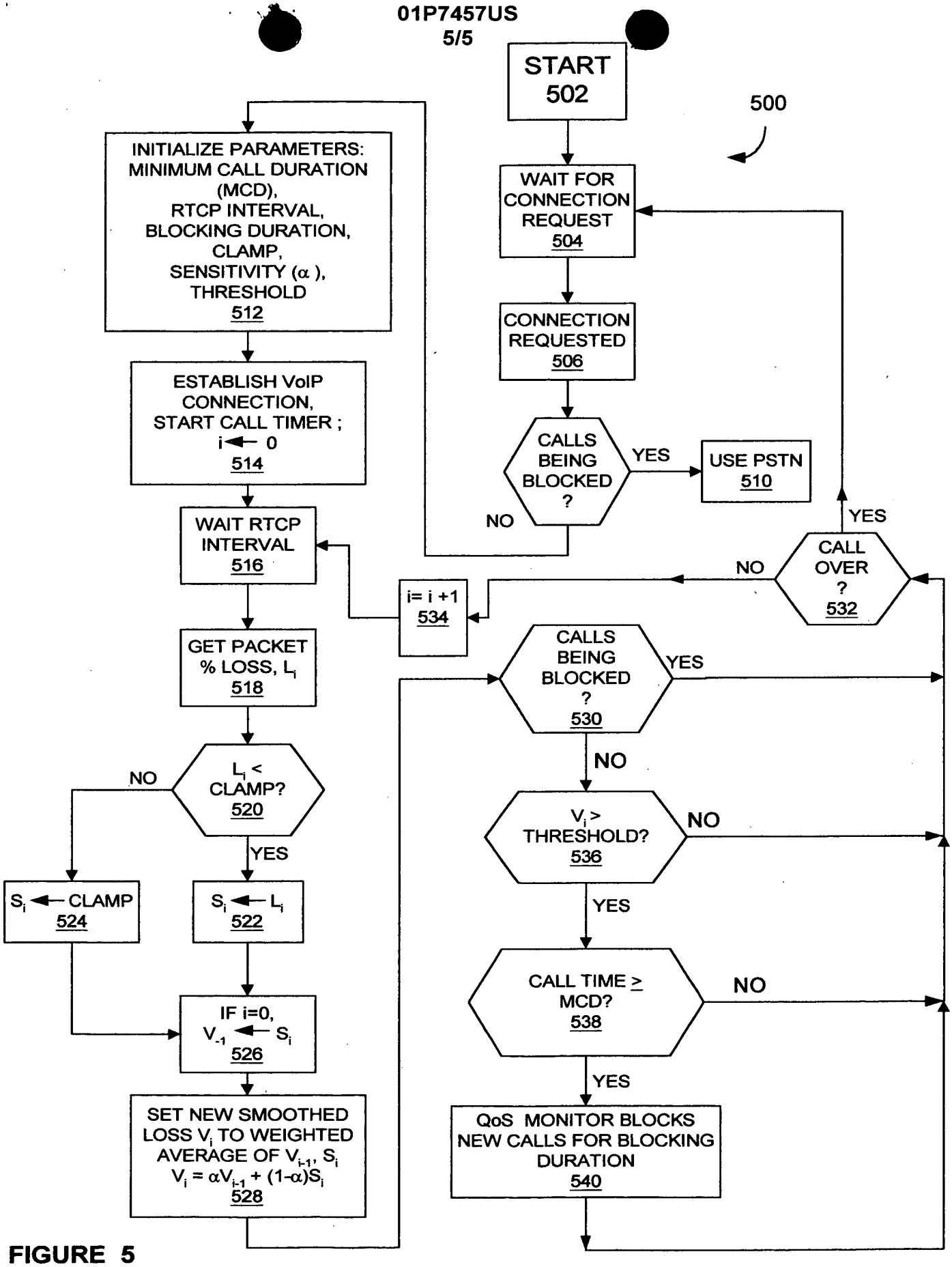

START
502
500
INITIALIZE PARAMETERS: MINIMUM CALL DURATION (MCD), RTCP INTERVAL, BLOCKING DURATION, CLAMP, SENSITIVITY (α), THRESHOLD
512
WAIT FOR CONNECTION REQUEST
504
CONNECTION REQUESTED
506
CALLS BEING BLOCKED ?
YES
USE PSTN
510
NO
ESTABLISH VoIP CONNECTION, START CALL TIMER ; i ← 0
514
WAIT RTCP INTERVAL
516
i= i +1
534
CALL OVER ?
532
YES
NO
GET PACKET % LOSS, L_i
518
CALLS BEING BLOCKED ?
530
YES
NO
L_i < CLAMP?
520
NO
YES
V_i > THRESHOLD?
536
NO
YES
S_i ← CLAMP
524
S_i ← L_i
522
CALL TIME ≥ MCD?
538
NO
YES
IF i=0, V_{-1} ← S_i
526
QoS MONITOR BLOCKS NEW CALLS FOR BLOCKING DURATION
540
SET NEW SMOOTHED LOSS V_i TO WEIGHTED AVERAGE OF V_{i-1}, S_i
$V_i = \alpha V_{i-1} + (1-\alpha)S_i$
528

FIGURE 5